

HOYA NEW



Bogor Botanical Garden, Indonesia

Broad tree lined avenues 1981, Picture by Dale Kloppenburg
Bogor Botanical Garden, Indonesia.

A pdf publication devoted to the Genus
Hoya ISSN 2329-7336

Editor:
Dale Kloppenburg
Volume I Issue 3
December 2013

Contents

This third issue will be devoted to the publication of some more new hoya species from the Philippines. I have accumulated a backlog of unpublished species and feel it necessary to publish these species namely in the name of conservation. When a species is collected from the wild, I feel it is wise to identify it, propagate it and name it. In this way it will eventually get it into commercial channels, be distributed to all those interested in this genus and thus be preserved. If in the future the species is lost through natural causes or forest destruction it will still be here on earth in your collection.

The following new species are presented in PDF format with ISSN number.

1. **Hoya albida** Kloppenburg, Cajano & Carandang
2. **Hoya bifunda** Klopp., Siar, Cajano, Guevarra & Carandang
3. **Hoya bifunda subsp. integra** Kloppenburg, Siar, Cajano, Guevarra & Carandang
4. **Hoya eburnea** Kloppenburg, Guevara & Carandang
5. **Hoya gelba** Kloppenburg, Guevarra & Carandang
6. **Hoya pseudoleyensis** Klopp., Mendoza, Guevarra & Carandang
7. **Hoya santiagoi subsp. mandozai** Kloppenburg

NOTE: please see the Website publication of these species at “www.rare-hoyas.com”. Go to end and click on “publication” to access new species publications.

Hoya albida Kloppenburg, Cajano & Carandang ISSN # 2329-7336

Hoya albida Kloppenburg, Siar & Cajano sp. nova, holotypus #71808 (CAHUP) hic designatus. Cymis umbelliformibus, pedicellis glabris, strictus 1.8 cm longis, albida, teretem, floribus in genere inter minores, albidus; calyces segmentis lanceolata glabris 0.12 cm longis et 0.08 cm latis; corolla rotatam, penta-lobata, usque infra medium, lobis ovato triangularis, 0.92 cm diametro complanatus, extus glabram, intus uniformiter papilosa; coronae lobis anteriore spatulate, posterior adsentibus subobtusis, dorso concavis, pagina subtiliter sulcatis, subtus usque ad basin caniculatis, pollinibus parvus, 0.25 mm longis, translatoribus deltatus, retinacula 0.10 mm longis.

This species of hoya has a small whitish colored flower with an upright corona in a white rotate deeply cut corolla, the pollinarium is also relatively small. The floral parts are shown below with measurements and comments.



Pedicel: section enlarged ca. 40x, 1.8 cm long, white color, strict, terete, glabrous 0.06 cm in diameter.



Flower: including the calyx and pedicel section enlarged ca. 16x. The sepal apices do not reach the corolla sinuses.



Calyx: side view enlarged ca. 16x. The sepals are granulose outside, slick glabrous inside, somewhat linear-triangular 0.12 cm long and 0.08 cm at the widest.



Top inside view of a calyx, lobes very little overlap at the base, edges with a few scattered cilia. No ligules seen.

Ovaries: narrow columnar, glabrous 0.11 cm tall and 0.03 cm wide at pair base.



Corolla: outside surface enlarged ca. 10x.

This surface is white, finely granulate, glabrous, lobes are cut more than half way, broadest out from sinuses, apex acute, center with a short column, 0.08 cm in diameter 0.05 cm deep.



Corolla inside surface view enlarged as above. Surface is finely granulate to finely puberulous all over.

Sinus – sinus	0.24 cm
Sinus – center	0.18 cm
Sinus – apex	0.33 cm
Apex – center	0.46 cm
Widest	0.30 cm



Corona: bottom view enlarged ca. 20x. Surfaces are glabrous, lobes are channeled to near the central thickened column with bulbous protrusions, outer apices subacute. Anther wings with rounded apices.

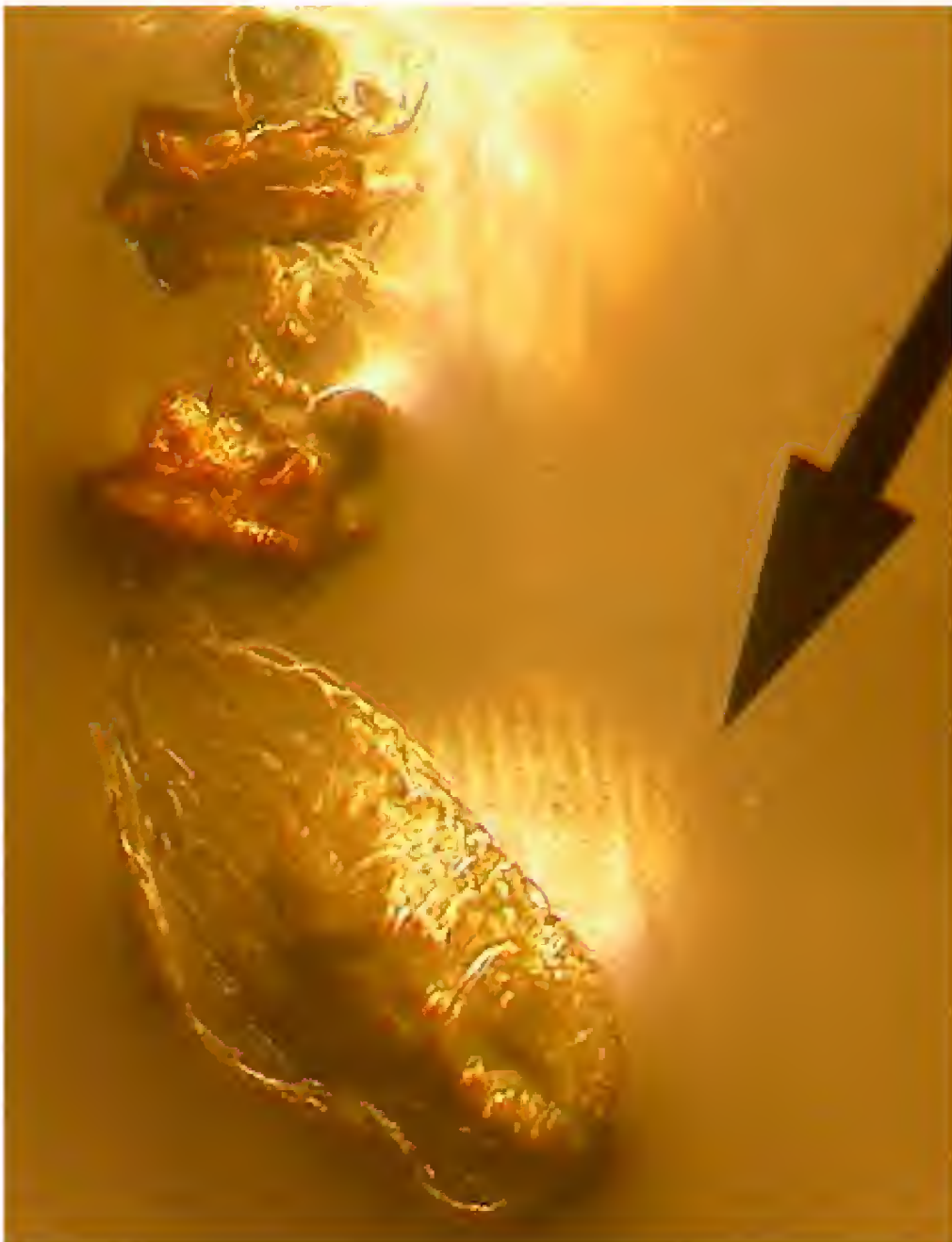


Top (dorsal) view of the part of a corona, the outer lobes are steeply raised outside, dorsal is sway backed and concave with narrow rather sharp edges, inner lobes are raised a little and spatulate, actually nearly touch in the center.

Apex – apex	0.12 cm
Widest	0.06 cm
Ret – ret.	0.04 cm
Ret – center	0.04 cm
Aw. – aw.	0.08 cm
Aw. – center	0.08 cm



Individual corona scale side view enlarged ca. 65x, outer apex of lobe greatly raised above the center, edges of dorsal narrow and sharp, anthers (below right) are longer than the inner coronal lobe but mostly covered by it. Surface of scale, except inner lobe are finely sulcate.



Two retinacula with translators and one pollinium enlarged ca. 330x.

Pollinium

length	0.25 mm
widest	0.09 mm

Retinaculum

length	0.10 mm
shoulder	0.08 mm
waist	0.04 mm
hip	0.05 mm
ext.	0.02 mm

Translator

length	0.05 mm
depth	0.02 mm

Ratios: p/r 2.5 p/w 2.8

Translator /caudicle type: d/o

Leaves: petiolate, opposite, glabrous, plinerved, anastomosing, sub-ovate, base obtuse, apex apiculate, nerves lighter then leaf surface.



Collection number Quezon 3-102

12. Quezon 3-102

Leaf sample	Length (cm)	Width (cm)	Thickness (cm)
1	13.5	4.8	0.140
2	12.2	4.0	0.170
3	10.8	3.6	0.170
4	11.8	4.4	0.160
5	9.0	3.5	0.195
6	8.5	3.4	0.195
7	12.3	4.5	0.150
8	12.1	3.9	0.130
9	7.7	4.9	0.170
10	8.7	3.6	0.170
Mean	10.7	4.1	0.165
Range	7.7-13.5	3.4-4.9	0.130-0.195

Additional photos from George Mendoza:



Hoya bifunda Kloppenburg, Siar, Cajano, Mendoza. Guevarra &
Carandang ISSN # 2329-7336

Hoya bifunda Kloppenburg, Siar, Cajano, Mendoza, Guevarra & Carandang sp. nova, holotypus 71844 (CAHUP) hic designatus. Hic species nova a speciebus aliis hoyam floribus lobae canalis distinguenda. Frutex scandens, inflorescentiis exceptis glabra, ramis teretibus, foliis carnosus ellipticus, basi obtusis, apice apiculata 9.8 cm longis et 3.5 cm latis, plinervis; umbelliformibus pedicellis gracilibus filiformibus 1.5 cm longis et 0.06 cm diametro. Calyces segmentis triangularibus, ciliatus 0.11 cm longis et 0.08 cm latis, cum ligulae; corolla rotate ca. 0.82 cm diametro caplanatus, penta lobata usque infra medium, lobis ovato triangularis, extus glabram, intus papilosa praeter ad centram glabra; coronae lobis anteriore spatulate dorso concavo et habens carina, lobis posteriore ascendentibus, obtusis, subtus usque ad basin caniculatis. Pollinarium minore.

This new species is distinguished from other hoya species by the extension of the inner ends of the corona ventral channel extending into two pads. (see photos below). This plant is a vine with oppositely petioled elliptic foliage, base obtuse and an apiculate apex, plinerved. It has a beautiful small cluster of rose colored flowers with red center. The collection number is Quezon 3-100.

See the details, measurements, pictures and data below:



Pedicel: section enlarged ca. 37x. It is 1.5 cm long and 0.06 cm in diameter, glabrous, strict, terete.



Calyx: side view enlarged ca. 20x. The sepals are ovate triangular, ciliate with a sub obtuse outer apex, small overlap at the base.



Calyx inside view enlarged ca. 30x, the surface is glabrous, ligules are present at the base sinuses. Sepals are 0.11 cm long and 0.08 cm at the widest, with a few cilia. Sepals do not reach the corolla sinuses.

Ovaries: are dome shaped, 0.09 cm tall and base pair is 0.05 cm wide; glabrous.



Side view of a flower enlarged ca. 15x. The sepals do not reach the corolla sinuses, the corolla is glabrous outside. Flower normally rotate when fully open, with edges and apices rolled under. See picture below.



Corolla: ventral (outside) surface enlarged ca. 15x, this surface is smooth glabrous, thinner around the collar area.

Sinus – sinus	0.20 cm
Sinus – center	0.16 cm
Sinus – apex	0.28 cm
Apex – center	0.41 cm
Widest	0.27 cm



Corolla dorsal (inside) surface enlarged as above. This surface is finely puberulous except around the central collar (under the corona) where it is glabrous. The lobes are broadest above the sinuses, apices are acute.



Bottom (ventral) view of a corona enlarged ca. 27x. The surfaces are glabrous, outer apex obtuse, channeled below, but with unusual pad like inner (central) extensions. A rather long central column. Anther wing apices are nearly flush at the sinuses. Central column is 0.03 cm long.



Corona: scale top view enlarged ca. 50x. The inner lobe is spatulate, does not quite reach the corolla sinus, the dorsal is nearly horizontal, concave with a keel down the center, outer lobe raised slightly. Note here the curved edge of the anther wing (upper left and how it is extended below to form a somewhat tongue like projection, a shelf visible below on both sides of the inner lobe). Dorsal surface is parallel sulcate.

Apex – apex	0.15 cm
Widest	0.06 cm
Ret. – ret./center	0.04 cm
Aw. – aw/center	0.09 cm



Corona scale side view enlarged ca. 53x, to show how the channel lobe inner ends project like feet at the base (ventral side) below its inner lobe apex (dorsal surface).



A greatly enlarged view of the ventral surface of a coronal lobe showing the elongated tongue (or pad) like projections (upper end) that are extensions of the ventral lobe channel, the ends that would normally point to the central column. The surface is diagonal sulcate, the outer and inner lobe apices are obtuse. The lobes extend 0.03 cm. I have never observed this on any previous hoya species, it is unique, and different.

Pollinarium enlarged ca. 290X.



Pollinium

length 0.23 mm
widest 0.10 mm

Retinaculum

length 0.06 mm
shoulder 0.06 mm
waist 0.04 mm
hip 0.05 mm
ext. 0.03 mm

Translator

length 0.06 mm
depth 0.02 mm

Caudicle

bulb 0.02 mm

Translator/caudicle type: l/o

Ratios: p/w 2.3 p/r 3.8

Below: Pictures from George Mendoza



DSC 4427



DSC 4430

Leaves: opposite, petiolate, glabrous, elliptic, base obtuse, apex apiculate, nerves are plinerved and lighter color than leaf surface. Petioles curved with slight anthocyanin pigmentation. Leaf data below from Dr. Monina Siar.

References:

1. Hoya Coronal Column Types with illustrations, by Dale Kloppenburg 2012, 44 pp.
2. The Hoya calyx, 3 sections by Dale Kloppenburg. 2009, 368 pp.

Contributors:

Mary Ann Cajano Agricultural Technician Museum of Natural History, University of the Philippines, Los Banos (UPLB), Laguna Philippines.

Jennelyn M. Carandang, University Researcher Associate, Crop Science Cluster, Institute of Plant Breeding, College of Agriculture, University of the Philippines, Los Banos (UPLB), Laguna, Philippines.

Maria Luisa D. Guevarra, University Researcher, Fruit and Ornamental Crops Section, Crop Science Cluster, Institute of Plant Breeding, College of Agriculture, University of the Philippines, Los Banos, (UPLB) Laguna, Philippines.

Dale Kloppenburg retired: Graduate UC Berkley, plant genetics, Lt. USNR, Plant Breeder and Research Agronomist, now Taxonomist of Genus Hoya.

George Mendoza, Landscape Artist, Nurseryman and Plant Explorer from Quezon City, Philippines, visit his web site www.forest-treasures.com.

Simeona V. Siar former University Former Researcher -Crop Science Cluster, Institute of Plant Breeding. College of Agriculture, University of the Philippines, Los Banos, Laguna Philippines. She helped me (Dale Kloppenburg) greatly for years with Hoya species, we will all miss her, she died 19 December 2011.



Quezon 3-100

Leaf sample	Length (cm)	Width (cm)	Thickness (cm)
1	9.3	3.5	0.085
2	13.5	3.9	0.065
3	11.9	3.6	0.100
4	9.9	3.9	0.090
5	8.9	3.3	0.090
6	7.7	3.5	0.065
7	10.7	3.6	0.065
8	8.1	3.5	0.105
9	9.5	3.1	0.065
10	8.3	2.8	0.080
Mean	9.8	3.5	0.081
Range	7.7-13.5	2.8-3.9	0.065-0.105

Photos of flowers 2011



Photos of leaves 2012



***Hoya bifunda* Kloppenburg, Siar, Mendoza, Cajano, Guevarra & Carandang**
Holotype – CAHUP # 71844



Hoya bifunda subsp. integra Kloppenburg, Siar, Cajano, Guevarra & Carandang ISSN # 2329-7336

Hoya bifunda subsp. integra Kloppenburg, Siar, Cajano, Guevarra & Carandang sp. nova, holotypus 71857 (CAHUP) hic designatus. Frutex scandens herba omnino glabra praeter corolla dorsus pubescentibus, ramis teretibus, folliis carnosis ellipticus –oblanceolatis, basi sub cuneatus-obtusis, apice acutis, triplinervis; petiolus 1.13 cm longus, umbelliformibus globosum, pedicellis gracilibus filiformibus 1.2- 1.5 cm longus et 0.05 cm diametro, usque infra media, 5-lobata, extus glabram, intus pubescentem sub-corona. Corolla rotatum; coronae lobis anterior spatulata, posterior erecta, obtusa, dorsa concavis medio gibbo, subtus caniculatis, 0.10 cm longis. Similis *Hoya bifunda* Kloppenburg, Siar, Mendoza, Cajano, Guevarra & Carandang, sed corolla grandior 0.90 cm contra 0.82 cm diametro complanatus, coronae lobus minorior brevior 0.10 cm contra 0.15 cm longis et pollinarium longior 0.29 mm longus contra 0.23 mm; translatoribus differt.

This is a climbing plant glabrous all over except the dorsal (inside) surface of the corolla in pubescent, stems are round, leaves are fleshy elliptic to oblanceolate in shape, with the base narrow to obtuse, with an acute apex, triplinerved, petioles are 1.13 cm long. Peduncles are 3.19 cm long, flower clusters globose, pedicels fine filiform 1.2 to 1.5 cm long and 0.05 cm in diameter, cut to below the middle, five lobed, outside glabrous, inside pubescent except under the corona. The corolla is rotate; the interior corona lobes are spatulate, outer lobes erect obtuse, the dorsal is concave with an umbo forward, below they are channeled, 0.10 cm long. This species is similar to *Hoya bifunda* Kloppenburg, Siar, Mendoza, Cajano, Guevarra & Carandang, corolla flattened is larger 0.90 cm versus 0.82 cm in diameter, the coronal lobes are smaller 0.10 cm versus 0.15 cm long and the pollinarium is longer 0.29 mm versus 0.23 mm and the translators are different. Below are more details:



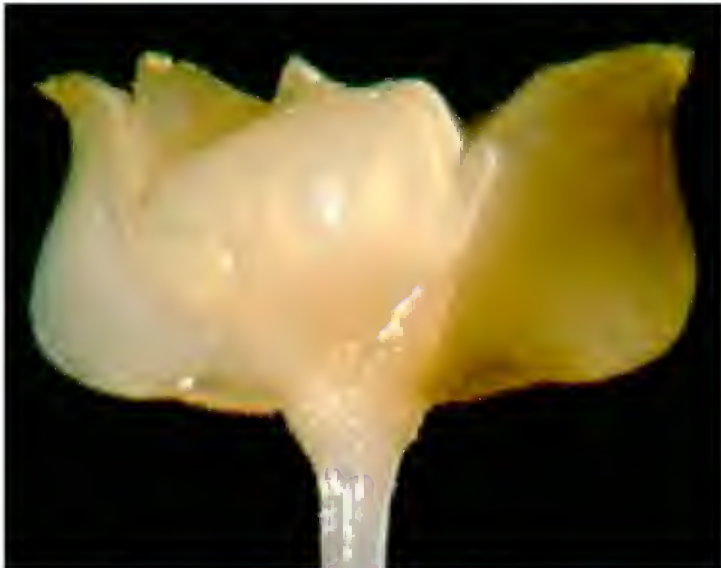
Pedicel: section enlarged ca. 60x. 1.2 -1.5 cm long, terete, glabrous, strict; 0.05 cm in diameter. Pedicel enlarges as it nears the calyx.



Calyx: side view enlarged ca. 40x. Sepals are granulate outside slick glabrous inside, triangular in shape with a small basal overlap apices are sub acute.



Calyx side view enlarged ca. 34x. Sepals are 0.11 cm long and 0.07 cm at the widest, ligules are present at the sinuses inside. The ovaries are small dome shaped, glabrous, 0.08 cm tall and base pair 0.05 cm wide.



Flower: side view enlarged ca. 10x. The sepals do not reach the corolla sinuses. The corolla is normally rotate when fully open.



Corolla: outside surface enlarged ca. 12x, the surface is glabrous, lobes are widest just outward from the sinuses.

Sinus – sinus	0.19 cm
Sinus – center	0.15 cm
Sinus – apex	0.33 cm
Apex – center	0.45 cm
Widest	0.29 cm



Corolla: Inside surface enlarged as above, surface is pubescent, lessening as it approaches the central area where it is glabrous.



Corona: side view enlarged ca. 14x. The surfaces are glabrous. Outer lobes are raised and obtuse, end thin due to channel sides below beginning away from the apex. The central column is rather long and thin walled; 0.04 cm long and opening 0.12 cm wide.



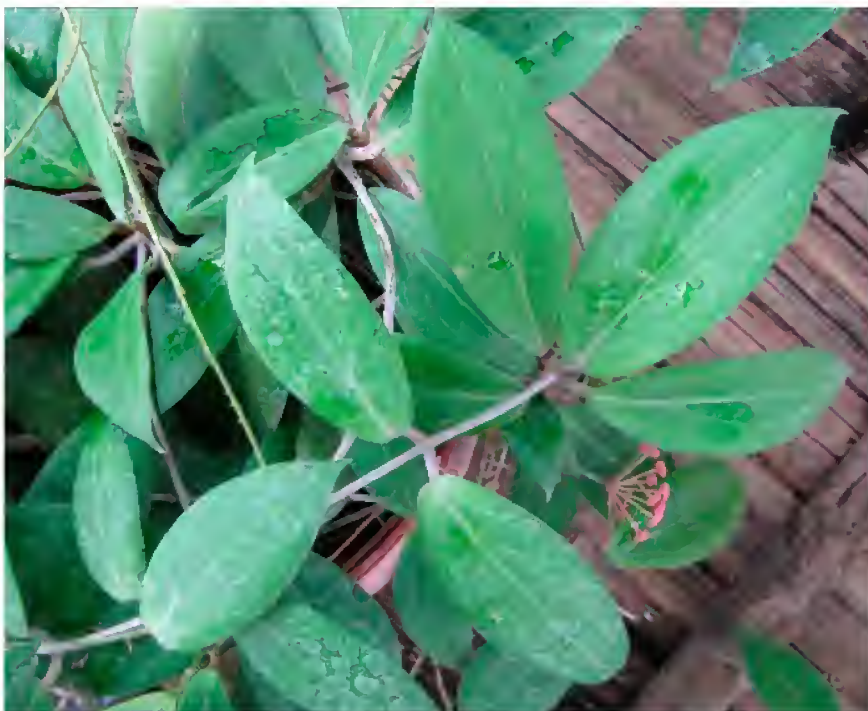
Corona: top view enlarged ca. 25x. The inner lobes cover the center and are spatulate, dorsal is concave with an umbo forward, outer lobes are raised and obtuse. Anther wing apices are narrow and acute.

Apex – apex	0.10 cm
Widest	0.06 cm
Ret. – ret./center	0.05 cm
Aw. – aw.	0.10 cm
Aw. - center	0.08 cm



Coronal scale side view enlarged ca. 45x.

Pictures sent by Dr. Monina Siar.





Pollinarium enlarged
ca. 270x.

Pollinium

length 0.29 mm
widest 0.14 mm

Retinaculum

length 0.06 mm
shoulder 0.09 mm
waist 0.06 mm
hip 0.07 mm
ext. 0.04 mm

Translator

length 0.07 mm
depth 0.01 mm

Caudicle

bulb. diam. 0.07 mm

Ratios:

p/r 4.8
p/w 2.1

**Translator/caudicle
type: l/o**

Quezon 3-094

Leaf sample	Length (cm)	Width (cm)	Thickness (cm)
1	9.3	2.7	0.125
2	10.9	3.5	0.115
3	7.6	3.1	0.110
4	9.9	3.0	0.100
5	10.8	2.3	0.120
6	7.5	2.8	0.115
7	7.9	3.2	0.125
8	7.9	3.1	0.130
9	9.1	3.1	0.110
10	9.2	2.8	0.130
Mean	9.0	3.0	0.118
			0.100-
Range	7.5-10.9	2.7-3.5	0.130

Leaves: opposite, glabrous, long petiolate, elliptic-obovate, plinerved, nerves lighter color than the leaf surface, base sub-cuneate apex tapered acute. Petiole curved, terete, glabrous 1.0 – 1.8 cm long. Internodes, terete, glabrous, 2.0 cm – 8.0 cm long.

Leaves: 10.1 cm x 2.7 cm
 11.2 cm x 3.4 cm
 7.0 cm x 2.5 cm
 6.6 cm x 2.5 cm

References:

1. **Hoya unruhiana** to be published in a future issue.

Contributors:

Ms. Mary Ann Cajano Agriculture Technician, Museum of Natural History, University of the Philippines, Los Banos (UPLB), Laguna, Philippines.

Jennelyn M. Carandang, University Research Associate, Crop Science Cluster, Institute of Plant Breeding, College of Agriculture, University of the Philippines, Los Banos (UPLB), Laguna, Philippines.

Maria Luisa D. Guevarra, University Researcher, Fruit and Ornamental Crops Section, Crop Science Cluster, Institute of Plant Breeding, College of Agriculture, University of the Philippines, Los Banos, (UPLB) Laguna, Philippines.

Dale Kloppenburg retired: Graduate UC Berkley, plant genetics, Lt. USNR, Plant Breeder and Research Agronomist, now Taxonomist of Genus Hoya.

Simeona “Monina” V. Siar former University Researcher, Institute of Plant Breeding-Crop Science Cluster, University of the Philippines, Los Banos (UPLB), Laguna Philippines. She helped the senior author/contributor greatly for years with hoyo species, we will all miss her. She died 19 December 2011.

Photos of leaves and flowers in 2011



Photos of leaves and flowers in 2012





Hoya bifunda subsp. *integra* Kloppenburg, Siar, Mendoza, Cajano, Guevarra & Carandang. Holotype – CAHUP # 71857.



Hoya eburnea Kloppenburg, Guevara & Carandang ISSN # 2329-7336

Hoya eburnea Kloppenburg, Guevarra & Carandang sp. nova. holotypus #71849 (CAHUP) hic designatus. Epiphytica, volubilis, scandens, ramosa; caule ramisque filiformibus elongatis, flexuosis, teretibus, glabris, laxe foliatis; foliis; ellipticis vel ovato-ellipticis apiculatis-acutis, glabris, textura crasse coriaceis, sub-palmatus conspicuis; cymis Umbelliformibus multifloris ca. 23, rhachis demum cylindrica elongata, pedicellis filiformibus gracilibus, glabris, 2.0 cm longis et 0.05 cm diametro; floribus ut videtur nevidus in genere mediocribus; calycis segmentis triangularibus - sublineribus glabris, 0.15 cm longis et 0.06 cm latis ad basim, cum ligulae; corolla 5-fida rotata, extus glabra, intus aqualiter pubescenta circ. 1.10 cm diametiente companulatus, lobis late ovatis, acutis, circ. 0.35 cm longis; coronae apice acutis recurvatus, dorso concavus, intus dentatus, subtus canaliculatis; translator/caudicula typus d/o. Similis *Hoya albida* Kloppenburg, Siar & Cajano 2013, sed corolla diametiente companulatus 1.10 cm contrastre 0.92 cm et coronae lobus longior 0.22 cm contrastre 0.12 cm et pollinia longior 0.41 mm contrastre 0.25 mm; folia non plinervus sed sub-palmate et multus crassior 0.226 cm contrastre 0.165 cm, differt.

This hoyia is an epiphytic scrambling vine with elliptic to ovate elliptic leaves that have apiculate- acute apices, are glabrous, thick leathery, sub-palmate nervation, with many flowers (about 23) in a globose clusters, rachis cylindrical, pedicels slender, glabrous, 2.0 cm long and 0.05 cm in diameter whitish in color, with the sepals triangular, glabrous, 0.15 cm long and 0.06 cm wide at the base, ligules present; corolla 5 lobed, outside glabrous, inside evenly pubescent about 1.20 cm in diameter flattened, lobes broadly ovate, apex acute, about 0.35 cm long; corona apex acute and recurved slightly, dorsal concave, inner lobe dentate, below channeled. Translator/caudicle type d/o. The species is similar to *Hoya albida* Kloppenburg, Siar & Cajano 2013, but different in the corolla being larger (flattened 1.10 cm) versus 0.92 cm and the coronal lobes are longer 0.22 cm versus 0.12 cm measured apex to apex and the pollinia are also longer 0.41 mm versus 0.25 mm. The foliage is thicker 0.226 cm versus 0.165 cm and nervation not plinerved but nearly palmate.

Named for the ivory color of the flower corolla.

Below are photos of the flower parts and details shown below.



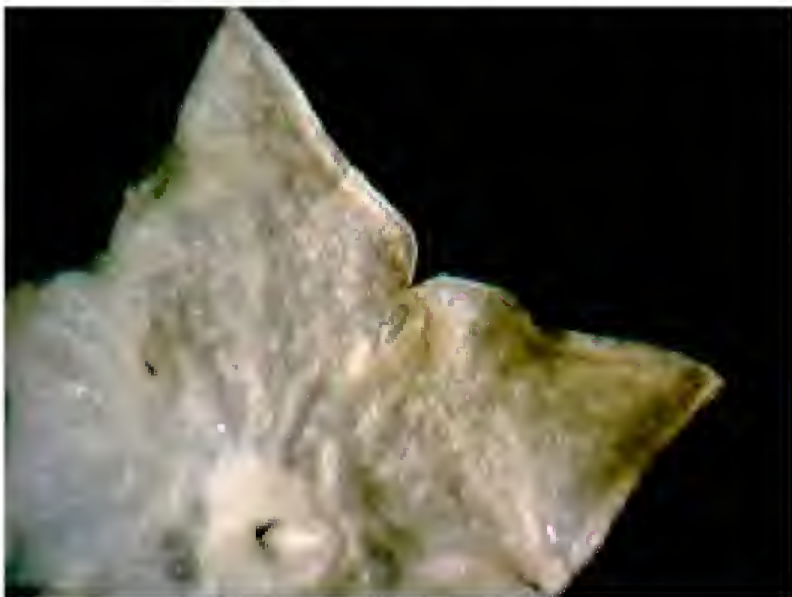
Pedicel: section enlarged ca. 50x, strict, slightly dull rose colored, the surface with linear striations and finely granulate, 2.0 cm long and 0.05 cm in diameter.



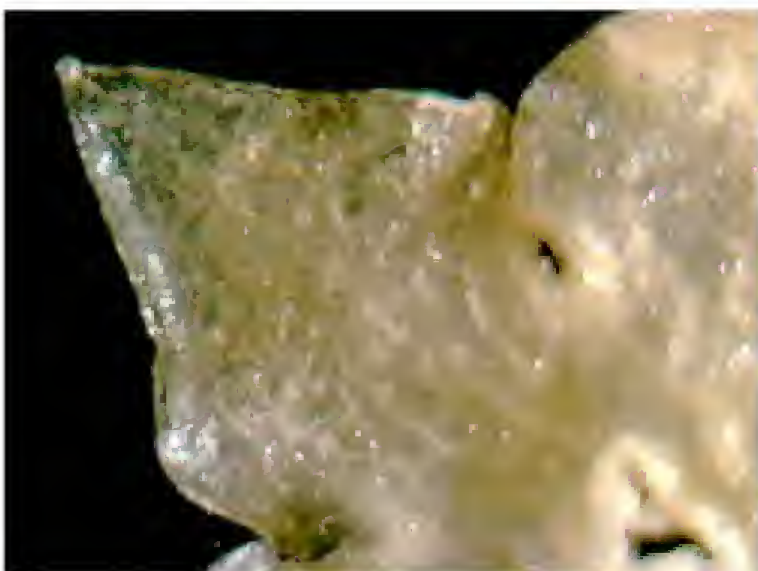
Calyx: side view enlarged ca. 20x, sepals are sub-linear do not reach the corolla sinuses, glabrous granular outside inside slick glabrous; 0.15 cm long and 0.06 cm wide at the base, overlap slightly, no ligules observed.

Ovaries: columnar, cm wide, glabrous, 0.11 cm tall and base pair 0.06

cm wide.

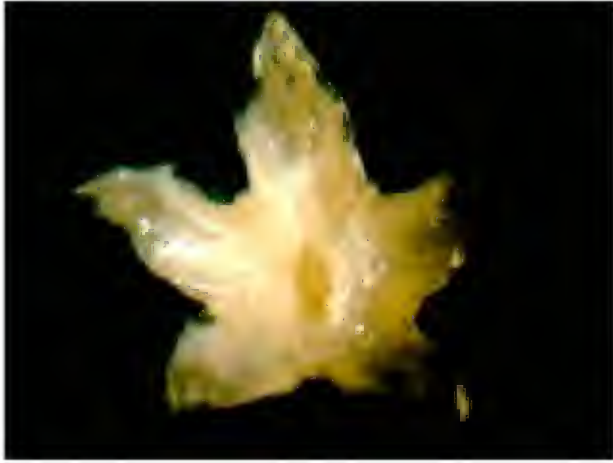


Corolla: ventral surface enlarged ca. 10x. This surface is finely granulate-glabrous, deeply cut with lobes very wide just above the sinuses, in opened flower edges and apices rolled under, apex acute center thickened and extending ventrally.



Corolla: dorsal surface enlarged as above, this surface is evenly pubescent except the very edges that are glabrous.

Sinus - sinus	0.24 cm
Sinus – center	0.20 cm
Sinus – apex	0.40 cm
Apex - center	0.55 cm
Widest	0.33 cm



Corona: ventral surface enlarged ca. 16x, lobes are channelled to near the large central column, outer lobe thin (not evenly channeled), and curved downward. Anther wing apices narrow acute extend just slightly from sinuses.



Corona: dorsal surface enlarged ca. 16x, surfaces are glabrous, inner lobe long dentate, raised a little, dorsal concave with central low ridge, edges thin and sharp, outer apex raised and acute.

Apex – apex	0.22 cm
Apex – center	0.24 cm
Widest	0.10 cm
Ret. ret.	0.07 cm
Ret. – center	0.06 cm
Aw. – aw.	0.12 cm
Aw. – center	0.10 cm



Coronal scale dorsal surface enlarged ca. 30x, inner lobe is long, narrow, dentate (here lower left) anthers exposed in center and slightly higher than inner apex, dorsal concave with sharp edges, apex turned down.



Coronal scale enlarged as above, surface is diagonally very finely sulcate, note how thin the edges are, apex turned down. To lower right an open anther wing.



Pollinarium
enlarged ca. 140x.

Pollinium

length 0.41 mm
widest 0.18 mm

Retinaculum

length 0.16 mm
shoulder 0.12 mm
waist 0.06 mm
hip 0.08 mm
ext. 0.02 mm

Translator

length 0.11 mm
widest 0.05 mm

Caudicle

bulb diam. 0.05 mm

Translator type:

d/o

Date of Collection: March 5, 2012
 Place of Collection: Brgy. Kapintalan, Karanglan, Nueva Ecija
 Collectors: M. L. D. Guevarra & J. M. Carandang

2012-5-56

large leaves; thick and elongated; sub palmate and slightly folded upward (cupped)

Leaf sample	Length (cm)	Width (cm)	Thickness (cm)
1	19.7	7.1	0.235
2	20.1	6.0	0.200
3	14.1	5.7	0.215
4	13.2	5.2	0.280
5	16.5	6.2	0.195
6	20.3	7.9	0.295
7	16.1	6.6	0.205
8	17.2	7.7	0.225
9	21.8	9.6	0.175
10	12.3	5.0	0.235
Mean	17.13	6.7	0.226
Range	12.9-21.8	5.0 -9.6	0.175-0.295



Flower: cluster globose, of ca. 23, crowns upright; white, corolla white with reflexed sides and apices. Pedicels dull rose colored. Occasionally flowers can exhibit a slight yellow color.



Leaves: petiolate, opposite relatively thick, and relatively large, sub-palmate nervation anastomosing lighter color than the leaf surface, base obtuse, apex sub acuminate-acute; long curved petioles.

Contributors:

Ms. Jennelyn M. Carandang is a University Research Associate, Crop Science Cluster-Institute of Plant Breeding, University of the Philippines, Los Banos (UPLB), Laguna, Philippines.

(Bebs) Maria Lusia D. Guevarra, her title is University Researcher, Fruit and Ornamental Crops Section, Crop Science Cluster, institute of Plant Breeding, College of Agriculture, University of the Philippines in Los Banos, Laguna, Philippines.

Dale Kloppenburg retired: Graduate UC Berkley, plant genetics, Lt. USNR, Plant Breeder, Research Agronomist, now taxonomy of Genus Hoya.

Holotype sheet copy 71859 (CAHUP)



Hoya gelba Kloppenburg, Siar, Guevarra & Carandang ISSN # 2329-7336

Hoya gelba Kloppenburg, Siar, Guevarra & Carandang sp. nova, Holotypus #71858 (CAHUP). Hic designatus. Similis *Hoya fitchii* Kloppenburg & Siar Fraterna 22/4 2009 sed differt, corolla 1.02 cm diametiente non 1.20 cm intus pubescentus non puberulentus; coronae foliolis apice anteriorae non brevi dentatus posterior apicem adscendentibus et acutus non horizontalibus et sub-obtusius; anthera-alae apex acutus non quadratus.

This new species is similar to *Hoya fitchii* Kloppenburg 2009, but has a smaller diameter corolla 1.02 cm versus 1.20 cm and the inner surface is pubescent not puberulent; the lobes of the corona inner lobe is longer and different the lobes are not horizontal but have the outer apex raised and acute not somewhat obtuse, the anther wing apex is acute not squared off among other differences.

Details of study below:

Pedicle with calyx & ovaries below enlarged about 20x.



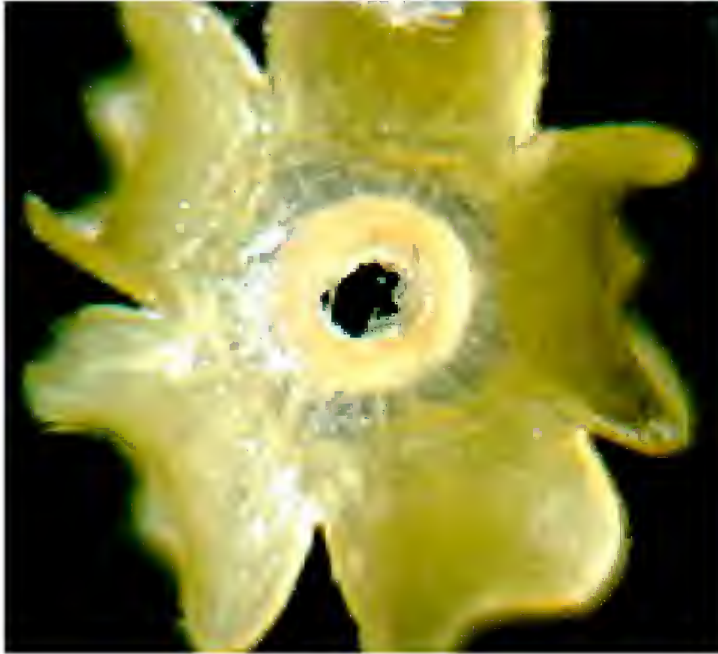
Pedicle: strict, terete, glabrous, 1.5 cm long 0.07 cm in diameter.

Calyx: triangular, small, sepals do not reach the corolla sinuses, occasional cilia, edges ragged, outside granulose, inside slick glabrous, 0.15 cm long x 0.11 cm widest, apex sub acute, one ligule seen.

Ovaries: dome shaped, glabrous, 0.12 cm tall, base pair 0.11 cm wide.

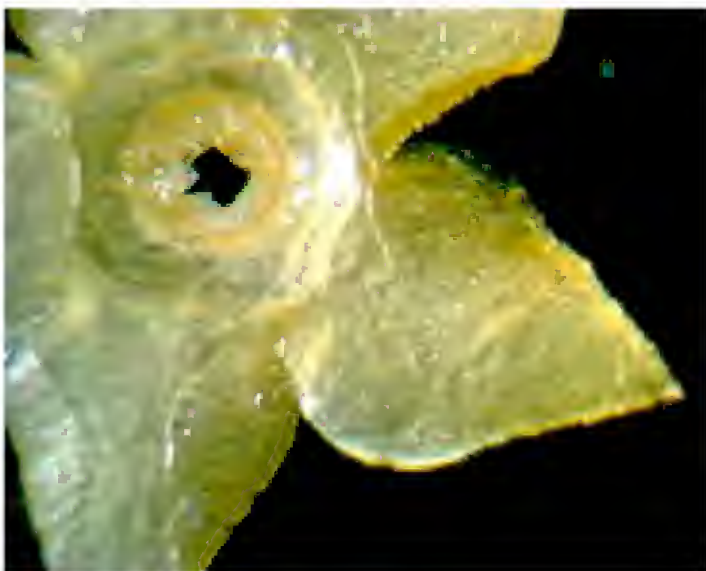


Flower upright enlarged about 8x.



Corolla: outside surface enlarged about 8x. Surface is glabrous, center raised and thickened, lobes deeply cut more than half way, wide above the sinuses. Central area raised about. 0.03 cm

Sinus – sinus	0.20 cm
Sinus – center	0.15 cm
Sinus – apex	0.40 cm
Apex – center	0.51 cm
Widest	0.35 cm



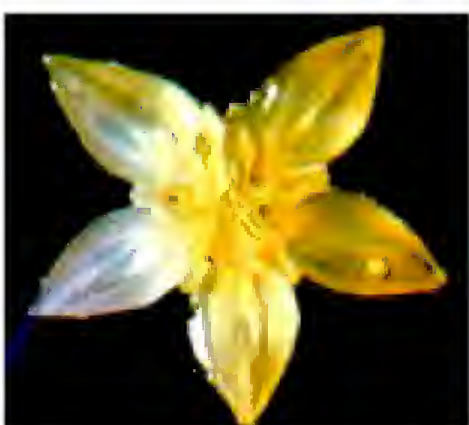
Corolla inside surface enlarged about 11x, surface is pubescent except around the raised central column and lobe apices. Central column 0.05 cm raised then sunken adjacent in a pentagonal area, corolla lobes are wide so as to make edged curl above the sinuses, apex is acute.



Top (inside) view of a flower enlarged about 9x. Coronal lobes reach or exceed the corolla sinuses, inner lobes are rounded and do not reach the center, anthers and retinacula are visible. Dorsal is concave with a low central ridge and a small forward umbo, outer apex is subacute. Lobe edges are sharp.



Bottom side of the corona enlarged about 11x. Lobes are channeled to in from sinuses, central column is raised and thickened. Lobes not noticeably sulcate. Anther wing apices are extended slightly and with acute apices.



Top view of the corona, enlarged about 9x.

Apex – apex	0.24 cm
Apex – center	0.27 cm
Widest, dorsal	0.10 cm
Ret. – ret.	0.07 cm
Ret. – center	0.06 cm
Aw. – aw.	0.13 cm
Aw. – center	0.12 cm



Side view of a coronal scale enlarged about 20x. Scale sides are plump, outer lobe raised.

Pollinarium enlarged about 200x.



Pollinium

length 0.42 mm
widest 0.18 mm

Retinaculum

length 0.17 mm
shoulder 0.10 mm
waist 0.05 mm
hip 0.07 mm
ext. 0.04 mm

Caudicle

bulb diam. 0.05 mm

Translator

length 0.08 mm
depth 0.03 mm

Ratio: pol./widest 2.3
pol./ret. 2.0

Leaf sample	Length (cm)	Width (cm)	Thickness (cm)
1	10.10	4.40	0.180
2	12.00	4.50	0.170
3	8.20	4.30	0.180
4	8.50	3.90	0.100
5	8.10	4.30	0.150
6	9.00	4.10	0.180
7	9.10	3.70	0.160
8	9.40	4.30	0.150
9	9.20	4.30	0.140
10	10.00	4.20	0.160
11	11.70	4.20	0.165
12	6.90	3.70	0.125
13	9.50	4.60	0.170
14	9.50	4.20	0.145
15	5.80	2.80	0.125
16	9.00	4.30	0.190
17	7.60	4.50	0.130
18	7.50	3.60	0.150
19	7.20	3.10	0.130
20	5.60	2.30	0.120
21	6.80	3.10	0.150
22	7.00	3.70	0.165
23	7.30	3.20	0.130
24	7.70	3.10	0.150
25	10.40	4.40	0.120
Mean	8.52	3.87	0.149
Range	5.60-12.0	2.30-4.60	0.100-0.190



Collection number and sent as: Hoya sp. Yellow via Monina Siar March 2010, four flowers. Closest to *H. fitchii* & NS05-206.

Contributors:

Ms. Jennelyn M. Carandang is a University Research Associate, Crop Science Cluster-Institute of Plant Breeding, University of the Philippines, Los Banos (UPLB), Laguna, Philippines.

(Bebs) Maria Lusia D. Guevarra, Her title is University Researcher, Fruit and Ornamental Crops Section, Crop Science Cluster, institute of Plant Breeding, College of Agriculture, University of the Philippines in Los Banos, Laguna, Philippines.

Dale Kloppenburg retired: Graduate UC Berkeley, plant genetics, Lt. USNR, Plant Breeder, Research Agronomist, now taxonomy of Genus Hoya.

Simeona “Monina” V. Siar former University Researcher, Institute of Plant Breeding-Crop Science Cluster, University of the Philippines, Los Banos (UPLB), Laguna Philippines. She helped the senior author/contributor greatly for years with hoya species, we will all miss her. She died 19 December 2011.

Hoya gelba



Figure 1. Holotype of *Hoya gelba* Kloppenburg, Guevarra & Carandang, sp. nov. (Coll. CPurificacion, CAHUP 71 858)

Hoya santiagoi subsp. mandozai Kloppenburg

ISSN # 2329-7336

Hoya santiagoi subsp. mandozai Kloppenburg, subsp. nova. Typus #97825 (PNH) hic designatus. Epiphytica, volubilis, scandens, ramosa; caule ramisque filiformibus elongatis, flexuosis, teretibus, glabris, laxe foliatis; foliis; ellipticis vel ovato-ellipticis acuminatis, glabris, textura crasse coriacea, nervis primariis 6 bene conspicuis, 8-9 cm longis, medio medio 2.8-3.3 cm latis, petiolo brevi carnosio, 0.6-0.9 cm longo; cymis Umbelliformibus multifloris, rhachis demum cylindrica elongata, pedunculis filiformibus gracilibus, glabris, 5.5 cm longis 0.18 cm diametro; floribus purpureo in genere mediocribus; calycis segmentis lanceolatus pubescentibus, 0.17 cm longis; corolla usque infra medium 5-fida rotata, extus glabra, intus pubescentibus; coronae foliolis acendibus, apice extus acutis, apice intus spatulatus, dorso obtusis, superne usque infra, apicem longitudinaliter carinatis, subtus sulcatis; poliniis oblique clavatis, translatoribus brevissimis, retinaculo rhomboideo.

A twining epiphyte, climbing branched, stalks and branches threadlike elongate, flexible round, glabrous, loosely leaved, with the leaves elliptical or ovate elliptical, acuminate, glabrous, with thick coriaceous texture, with 6 primary nerves very conspicuous, 8-9 cm long in the middle 2.8 – 3.3 cm wide, petiole short fleshy, 0.6 – 0.9 cm long: the cymes shaped like umbels of many flowers, with the rachis at last cylindrical, elongate, with the peduncle now short, at times nearly 7.5 cm long, with the peduncles threadlike slender, glabrous, 5.5 cm long; flowers purple, midsize in general; calyx segments lanceolate, pubescent outside, 0.17 cm long; corolla 5 lobed, rotate, outside glabrous, inside pubescent; with the corona scales ascending, outer apex acute, inner apex spatulate, with the dorsal obtuse, above longitudinally keeled all the way from back of the tip, channeled below, with the pollinia obliquely clavate, with the translators very short, with the retinaculum rhomboid.

Micro-photos below with comments and measurements follow:

Peduncle: 5.5 cm long, ca. 0.18 cm in diameter. Rachis expanded, bracteate.



Side view of the pedicel. calyx & ovaries enlarged about 8x.

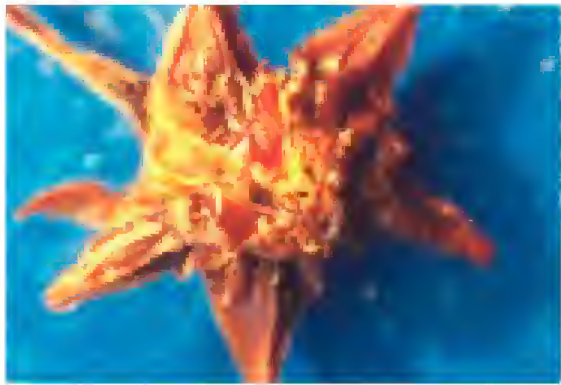
Pedicels: are very finely puberulous to glabrous, 3 cm long. terete, filamentous, curved at least 27° on this cluster.

Calyx: pubescent outside, apex acute base broad 0.17 cm long x 0.10 cm at the base. No ligules observed.

Ovaries: columnar, glabrous, 0.17 cm long.



Corona: bottom view enlarged about 8x. Scales with sharp edges, apex acute, channeled, large raised central thickened column, 0.10 cm tall and as wide. There appears to be bulbous nodules out from column base.



Top view of the corona enlarged as above. Flower was eaten by bupestids, so little of the corolla is left. Corona center raised a large wide sharp ridge down the dorsal. Outer apex tapered to a sub-acute apex, inner apex spatulate raised and meeting at the center. Corolla outside glabrous, inside is pubescent. Flower is purple in color.

Apex – apex	0.45 cm
Widest	0.15 cm ca.

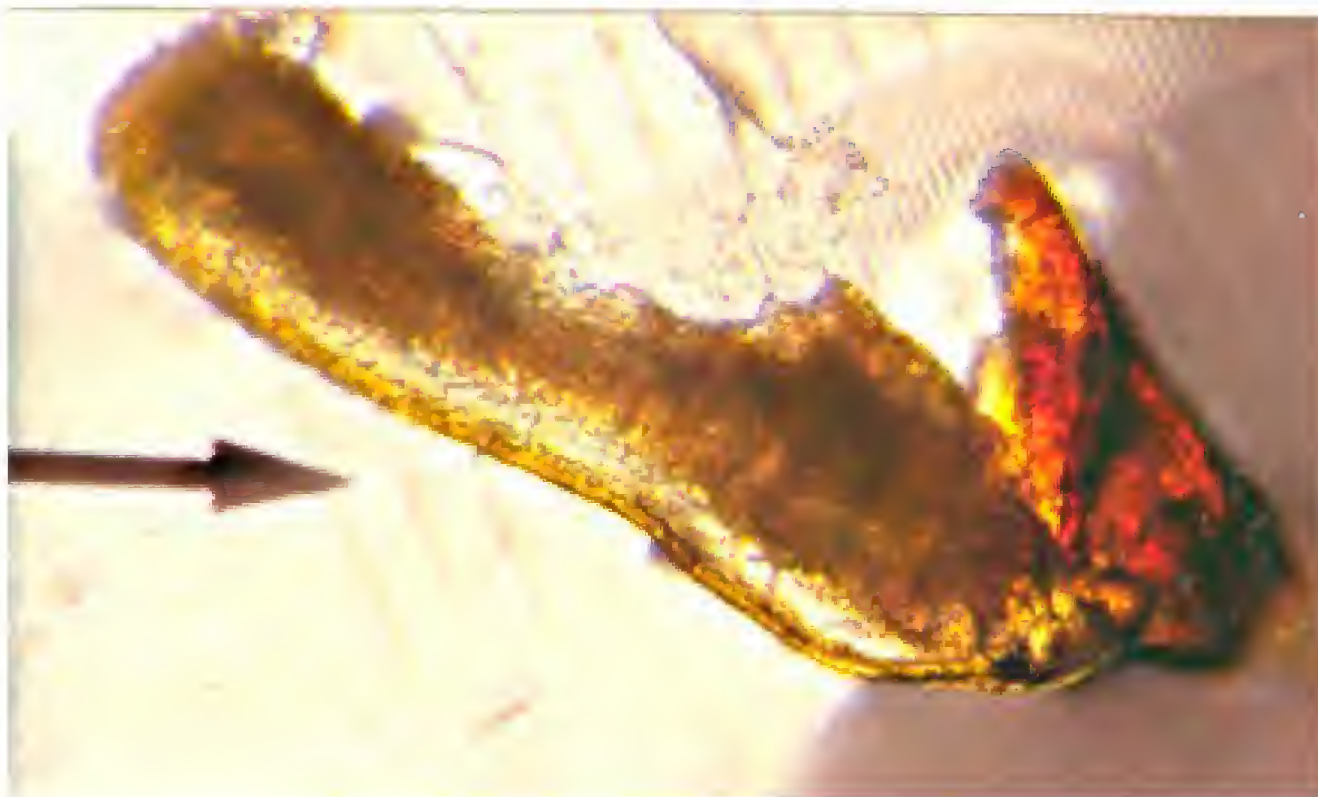


Photo of the pollinarium enlarged about 165x, pollinium has been eaten by bupestids.



Pollinarium		
length	0.70 mm	0.75 mm
widest	0.22 mm	
Retinaculum		
length	0.37 mm	
Translators		
length	0.12 mm	

Leaves: opposite, petiolate, glabrous, elliptic-ovate narrowly rounded, pinnate nervation, 6 + veins each side of midrib, 8- 9 cm long x 2.8 – 3.3 cm at the widest glabrous, base obtuse, apex apiculate but not acute. Petiole 0.6-0.9 cm long glabrous. Internodes to 18 cm long, thickened and enlarged.

17 flowers in cluster, purple in color. Vine 4 meters long.

Reduced copy of the Type sheet below: 97428 (PNH) collected by Demetrio R. Mandoza, former chief of Botany Division, National Museum, 5 June 1965, at Siguiwan, Tagawayan, Quezon, Luzon. Philippines, in a thicket at edge of a tidal swamp, vine 4 m long, inflorescence umbellate, purple flowers.

